October 2, 1962
136-026

Jack T.

A copy of our proposed test plan for Test Program #123 is enclosed. It has been submitted to Ed M. shop for comment and/or approval.

Getting our equipment ready for shipment to [redacted] is going to be a very tight schedule, however, we feel at this time that we will make the date. 25X1A

If there are any further questions on our system or the test program, please give us a call or drop us a line.

BLE

WRE

Gave them an extra week to work out bugs in isolator system Jack

Flight Test Program #123 Type II-A Equipment

The following outline represents our understanding of test flight parameters and delineates tests which we desire to perform during flight test program #123.

Vehicle Parameters:

V/H: We would prefer to operate major portions of the test as close to the mission V/H of .035 as possible. We presume that at least one test could incorporate a target pass at near the minimum ratio of .029 and one pass near the maximum of .042.

Velocity: It is presumed that the velocity will be in the vicinity of mach 0.9 for the nominal V/H flights. This figure has been used for our approximation of thermal conditions.

Altitude: An altitude of K-10 is being used in our calculations. It is assumed that this is the pressure altitude as denoted by the altitude - mach number curve forwarded to us.

Internal "Q" bay Pressure: Calculations are based upon a "Q" bay pressure of 4.85 PSIA.

Air Conditioning Input: 31 pounds per minute air flow at appromixately 78°F input from the E Bay, distributed as follows, is anticipated.

1. 6 pounds to optics and cassette through filter.
2. 15 pounds through electronic hatch modules.
3. 10 pounds through sides of upper hatch exhausted downward into bay.

Aircraft "Q" Bay Fittings:

1. E Bay bulkhead door will be required for oscillograph mount and air filter mount and distribution (for 6 pounds optics air).

2. No Bunce box will be fitted.

3. Cable connections will remain as previously defined.

4. INS outputs will be in cables (may not however, be used).

5. Cable forward to control panel will be available.

6. Attach points to vehicle will be as previously defined.

Aircraft Thermal Environment: Our calculations based on the above assumptions define a thermal environment as follows. (It would be appreciated if our approximations can be verified).

1. Oven bay maximum temp. 160°F
2. Oven bay to Q bay heat load of approximately 200 BTU/hour.
3. Heat flow, Q bay to outside structure, approximately 40 BTU per hour.
4. Window Temperature:
   Inside 40°F
   Outside 35°F
5. Exhaust temperature to INS, approximately 85°F.

Flight Duration: Approximately 1 hour 45 minutes.

Flight Path: Approximately 12 passes over test target.

Flight Test Procedures: We will supply the cognizant test engineer with a pre-flight data sheet prior to the planning of each test flight. The data sheet will be similar to that previously used by our test group. Our flight requirements will be generally of a flexible nature and may be modified to be compatible with the overall flight test program.

Test Instrumentation: Instrumentation will be controlled by the configuration controls. If driver action, such as focus step changes by switch operation are required, a time of action notation from the driver is requested. All other data will be obtained from automatic recording devices.

Approximate Loading and Check-out Time: After the initial configuration installation and check out of the equipment, it is estimated that equipment can be loaded and readied within a period of approximately four hours to six hours. At some time prior to the first "live" test, it is essential that the equipment be checked operationally with vehicle supplied power (tie down engine run up).

Test Program:

As we have already handled more than 200,000 feet of film in a reliability test and improvement program the next test for Type II-A configuration was intended to be a complete system thermal environment test. Current plans call for the II-A tests to operate as two separate series. The first portion under relaxed thermal environment, the second in the previously scheduled hot vehicle. As mechanical installation and vibration tests have also already been performed, the prime goals of the initial tests will be:

1. Electrical compatibility.
2. Development of installation and check out technique.
3. Installation of thermal hardware.
4. Check out of system Isolation Stabilizer to determine improvement of quality consistency.
5. Check out of V/H system capability to control configuration during recording mission.

Test Preparation

Shipping of Equipment: Every effort is being expended to have our equipment ready for shipment to [redacted] on October 22, 1962. 25X1A
The schedule is a very tight one, due to the late return of equipment from the field. Transportation will be arranged on or about October 5 (at which time our ability to meet the October 22 date will be validated.)

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Readiness at [redacted] We have been fortunate in establishing a fair state of readiness at [redacted] over the last several months period. During the week of October 15 to 21, two or three engineering personnel will go to [redacted] to perform final equipment check out, discuss with the flight test engineers our final anticipated schedule, and be on hand for arrival of the II-A configuration and additional test and support equipment from the East Coast.

Test Plan:

I. Ground Checkout
   A. No installation in vehicle
      1. Unpack and set up test gear.
      2. Check configuration mechanically and electrically.
      3. Operate mechanism from electronic hatch modules (ground power)
      4. Install module pan to upper hatch.
      5. Fit cables to vehicle.
   B. Vehicle installation
      1. Install and recheck all mechanical and electrical interfaces.
      2. Fit Thermal Shields.
      3. Operate from cart power through vehicle wiring.
      4. Operate from vehicle power.

   Total time estimated: Four to five working days, unless unanticipated interface problems occur.

II. Initial flight test
   A. Focus check run, both units. Nominal V/H of .035 desired. Driver will be asked to operate focus position switch between each pass over target. V/H will be programmed, isolator stabilizer will be caged for at least 50% of flight. Instrumentation primarily for stabilization.

   Estimated time: Four to six hours vehicle install and checkout. (By careful scheduling, test could

follow Step I without unloading unit from vehicle). Time required to reduce data and ready configuration for next test, approximately four days.

III. Flight Test 2
A. Isolator stabilizer test. Nominal V/H of .035 desired. Programmed V/H fixed focus position. All data automatically recorded. Maximum flight time desired. Instrumentation primarily for stabilization.

Estimated Load Time: Six hours.
Estimated data reduction time and configuration turn around: 3 days.

IV. Flight Test 3
A. V/H Test. Nominal V/H desired. Active V/H sensor system. Isolator stabilizer functioning. Maximum flight time desired.

Estimated Load Time: Six hours.
Estimated data reduction and configuration turn around: 3 days.

V. Flight Test 4
A. V/H test. V/H steps at near .029, .035 and .042 desired. V/H system active. Isolator stabilizer functioning.

Estimated Load Time: Four to five hours.
Estimated data reduction and configuration turn around: 3 days.

VI. Flight Test 5
A. System test. Operation of vehicle between ranges of .029 and .042. Isolator stabilizer functioning. V/H system active. To obtain data on full system capabilities.

Estimated Load Time; Four to five hours.
Estimated data reduction time: Two days.

Limited thermal data will be obtained on all flights. Our first calculations indicate that although temperatures are considerably lower, anticipated temperature gradients for this test series may be in excess of those obtained in the hot flights.

At the completion of the initial portion of the test series, it is planned to install the thermal controllers and any other thermal hardware need for the hot flights planned for December.

The enclosed schedule summarizes time required based on a five day work week. The elapsed time schedule can be adjusted to be compatible with vehicle flight test plans if required. Arrival date of equipment at [redacted] has arbitrarily been established as October 25, 1962 for the purpose of scheduling. The proposed schedule indicates last test flight on November 20, 1962. Effort will be made to complete tests at an earlier date if possible.

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